

## ABSTRACT

The present invention relates to apparatus and methods for quantitative protein design and optimization.

1. A method for quantitative protein design and optimization, comprising:  
a. identifying a target protein structure;  
b. identifying a set of amino acids for substitution;  
c. substituting the amino acids in the target protein structure;  
d. determining the effect of the substitution on the protein structure;  
e. repeating steps b-d until a desired protein structure is obtained.